Remarks

The Office Action rejects claims 35, 36, 38, and 39 under 35 U.S.C. § 101 and 112, second paragraph the claimed recitation of a use fails to properly limit the independent method claims from which the rejected claims depend. This rejection is believed to be obviated by the above amendment, which properly sets forth the limitation therein as a method step.

Applicant has also clarified the language in claims 26 and 33 as requested in paragraph 9 of the Office Action.

The Office Action rejects claims 26 (*sic* 27?), 28, 33, 34, and 37 under 35 U.S.C. § 103(a) as unpatentable over "How Oil Refining Works" (HSW) in view of Rouffignac. This rejection is respectfully traversed.

The Office Action argues that "[t]he HSW reference teaches the claimed invention except for the production of syngas" and that Rouffignac teaches the reformation of hydrocarbons to produce syngas. Applicants respectfully disagree. In addition to the production of syngas, HSW also fails to teach supplying a liquid fuel consisting essentially of diesel fuel to a fractional distillation device in fluid communication with a reformer (the Office Action admits this in paragraph 15). This feature is found in claims 26 (and 27) and 34, which depend from claim 1, and also amended claim 28 and dependent claims 33 and 37. As neither of the cited references in this rejection disclose or suggest this feature of the claimed invention, Applicants respectfully request that this rejection be withdrawn.

The Office Action, in paragraphs 15 and 16, rejects claims 1, 3, 18, 19, 27, 28, 30, and 33 under 35 U.S.C. § 103(a) as unpatentable over HSW in view of Singh et al. This rejection is respectfully traversed.

HSW is a broad-brush encyclopedic description of the oil refining industry. It discloses a process where crude oil is fed into a fractional distillation column for separation into multiple fractions, and feeding the naphtha fraction to a reformer to produce gasoline and hydrogen. The primary reason this is done in oil refining is presumably because naphtha is of limited commercial value compared to gasoline, so it is therefore profitable to reform it to produce gasoline and hydrogen.

As admitted in the Office Action, HSW does not disclose any process under which a liquid consisting essentially of diesel fuel is supplied to a fractional distillation device. However, the Office Action asserts that such feature of Applicants' invention is made obvious by Singh et al. Applicants respectfully disagree. Firstly, the Singh et al reference discloses introducing diesel fuel *to a reformer, not to a fractional distillation device*. The Singh et al reference provides no motivation whatsoever for distilling the diesel fuel into light and heavy streams before introducing it to the reformer. Secondly, the Singh et al reference clearly teaches mixing the diesel fuel with hydrogen before reforming it, and thus does not utilize a liquid fuel consisting essentially of diesel fuel. Similarly, HSW provides no motivation for distilling diesel fuel at all, since, unlike naphtha, diesel fuel has valuable applications in its own right (such as use in diesel internal combustion engines or in the solid oxide fuel cell system of Singh et al). The sort of strained combination of references proposed in the Office Action, where snippets of each invention are combined in ways that do not make logical sense, without apparent reason except to support the rejection, is a clear indication of improper hindsight reasoning. Accordingly, Applicants respectfully submit that this rejection is improper and should be withdrawn.

The Office Action rejects claims 1-3, 18, 19, 27, and 34 under 35 U.S.C. § 103(a) as unpatentable over Hatanka et al in view of Holland et al. This rejection is respectfully traversed.

The Hatanka et al reference discloses a process of hydrodesulfurizing diesel fuel involving hydrodesulfurizing the fuel, distilling the hydrodesulfurized fuel into light and heavy streams, further hydrodesulfurizing the heavy stream, and then recombining the light and heavy streams to produce a final hydrodesulfurized diesel fuel. The Holland et al reference discloses a fuel processing system using reformers to produce hydrogen-rich streams for fuel cells. Holland et al teach that virtually any hydrocarbon can be used as a feed stream for this system. The Office Action argues that a skilled artisan would be motivated to stop the Hatanka et al process halfway through and, instead of recombining the light and heavy streams to produce hydrodesulfurized diesel fuel as taught by the reference, to instead feed the light stream into the fuel reformer system of Holland et al.

Why would one skilled in the art do such a thing? What possible reason, other than hindsight gleaned from Applicants' present invention, would there be to disregard the clear teaching of Hatanka et al and put their light stream into the Holland et al's reformer system? The Office Action suggests that the motivation would be to generate a hydrogen rich stream for a fuel cell as taught by the Holland et al reference itself, but that reasoning makes no sense. The Holland et al reference teaches that virtually any hydrocarbon, *including diesel fuel itself*, can be used as a fuel source for its system. What motivation would there be for undergoing the extra trouble and expense of distilling diesel fuel into heavy and light streams when the Holland et al reference itself teaches that diesel fuel works just apparently just as well as any other fuel source? Applicants respectfully submit that hindsight gleaned from Applicants' own invention is the only apparent motivation, which cannot be relied upon as a basis for determining obviousness. Accordingly, Applicants respectfully request that this rejection be withdrawn.

Should the Examiner have any questions regarding this matter, the Examiner is requested to contact Mr. Paul L. Marshall, who may be reached in the Troy, Michigan area at (248) 813-1240.

If there are any additional charges with respect to this Response or otherwise, please charge them to Deposit Account No. 50-0831 maintained by Applicants' attorney.

Respectfully submitted,

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